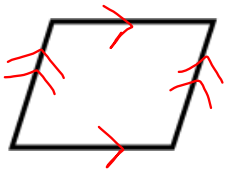
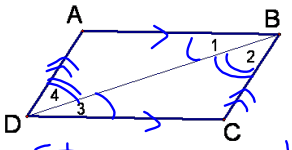
8-2 Parallelograms

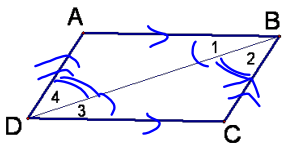
Parallelogram-quadrilateral with both pairs of opposite sides parallel





Given: ▱ABCD
Prove: $\overline{AB} \cong \overline{CD}$
$\overline{AD} \cong \overline{BC}$

St.	R.
① ▱ABCD	① Given
② $\overline{AB} \parallel \overline{CD}$; $\overline{AD} \parallel \overline{BC}$	② def of ▱
③ $\angle 1 \cong \angle 3$; $\angle 2 \cong \angle 4$	③ Alt. Int. $\angle$s thm
④ $\overline{BD} \cong \overline{BD}$	④ Refl.
⑤ $\triangle ABD \cong \triangle CDB$	⑤ ASA
⑥ $\overline{AB} \cong \overline{CD}$ $\overline{AD} \cong \overline{CB}$	⑥ CPCTC



Given: ▱ABCD
Prove: $\angle A \cong \angle C$

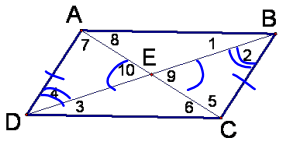
Statements	Reasons
① ▱ABCD	① Given
② $\overline{AB} \parallel \overline{CD}$; $\overline{AD} \parallel \overline{BC}$	② def of ▱
③ $\angle 1 \cong \angle 3$; $\angle 2 \cong \angle 4$	③ Alt. Int $\angle$s thm
④ $\angle A \cong \angle C$	④ 3rd $\angle$ Thm

Theorem 8.3-Opposite sides of a parallelogram are congruent 

Theorem 8.4-Opposite angles of a parallelogram are congruent 

Theorem 8.5-Consecutive angles of a parallelogram are supplementary 

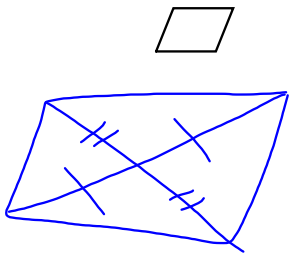
(Cons. Int ∠s thm)

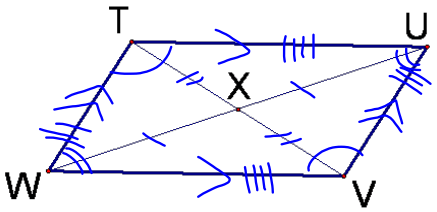


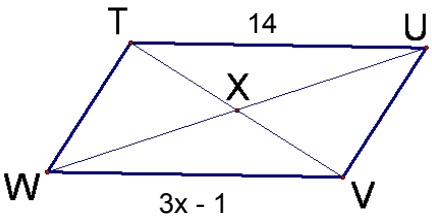
Given: ▱ ABCD
Prove: $\overline{AE} \cong \overline{CE}$
$\overline{DE} \cong \overline{BE}$

S.	R.
① ▱ ABCD	① Given
② ∠10 ≅ ∠9	② Vert. ∠s ≅
③ $\overline{AD} \cong \overline{BC}$	③ Opp. sides ▱ ≅
④ $\overline{AD} \parallel \overline{BC}$	④ def of ▱
⑤ ∠2 ≅ ∠4	⑤ Alt. Int ∠s thm
⑥ △ADE ≅ △CBE	⑥ AAS
⑦ $\overline{AE} \cong \overline{EC}$, $\overline{DE} \cong \overline{BE}$	⑦ CPCTC

Theorem 8.6-Diagonals of a parallelogram bisect each other







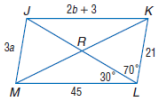
TX = 8
XV = .5y

$3x - 1 = 14$
$x = 5$

$8 = .5y$
$16 = y$

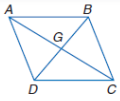
Use $\square JKLM$ to find each measure or value if $JK = 2b + 3$ and $JM = 3a$.

7. $m\angle MJK$ 8. $m\angle JML$
9. $m\angle JKL$ 10. $m\angle KJL$
11. a 12. b



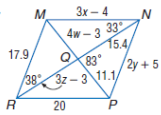
Complete each statement about $\square ABCD$. Justify your answer.

16. $\angle DAB \cong$? 17. $\angle ABD \cong$?
18. $\overline{AB} \parallel$? 19. $\overline{BG} \cong$?
20. $\triangle ABD \cong$? 21. $\angle ACD \cong$?



ALGEBRA Use $\square MNPR$ to find each measure or value.

22. $m\angle MNP$ 23. $m\angle NRP$
24. $m\angle RNP$ 25. $m\angle RMN$
26. $m\angle MQN$ 27. $m\angle MQR$
28. x 29. y
30. w 31. z



Find the point where the diagonals intersect.

ABCD is a parallelogram

A(5, -3) B(3, 5) C(-2, 7) D(0, -1)

$(1, 5, 2)$ use midpoint formula

HW
p. 518-519
3-16, 23-28, 33-36